

### **REMARKS**

Upon entry of the present amendment, claims 1-20 will remain pending in the above-identified application with claims 1-2, 4, 8, 11-14 and 16-20 standing ready for further action on the merits and claims 3, 5-7 and 9-10 standing withdrawn from consideration based upon an earlier Restriction Requirement.

Claim 1 has been amended. Support for the amendment to claim 1 can be found on page 1, lines 23-35 of the specification.

No new matter is being introduced by the present amendment to the claims. As such, entry of the instant amendment and favorable action on the merits is earnestly solicited.

### **Rejections under 35 U.S.C. § 103(a)**

Claims 1, 2, 4, 8, 11-14 and 16-20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kammler DE '726 (DE 19516726 A1) in view of Dries US '296 (US 2003/0003296) and Maeno JP '353 (JP 3-113353 A).

Claims 1, 2, 4, 8, 11-14 and 16-20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kammler DE '726 in view of Dries US '296 and Tankovich US '339 (US 5,614,339).

These rejections are respectfully traversed. Reconsideration and withdrawal of the rejections are respectfully requested based on the following considerations.

### **Nonobviousness over the Combination of the Cited References**

The present invention is directed to a method for sealing a fibre-based material to a counter-surface by a laser beam. It is alleged that the claimed method of the present invention is

obvious over Kammler DE '726 and Dries US '296 in combination with Maeno JP '353 or Tankovich US '339.

However, neither of Maeno JP '353 and Tankowich US '339 relate to a laser sealing of a fibrous material. Maeno JP '353 relates to a laser measurement system for plane materials such as paper. Tankowich US '339 relates to the removal of printing ink from documents by use of a laser. There is no rationale and/or reasonable expectation of success to reach the claimed method (*i.e.*, a method for sealing a fibre-based material to a counter-surface) based on Maeno JP '353 and Tankovich US '339, even in combination with the other cited references (*i.e.*, Kammler DE '726 and Dries US '296). (The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).)

Maeno JP '353 and Tankovich US '339 appear to deal with a laser beam, which allegedly passes through a paper layer. However, both of the cited references are silent about the problem of laser irradiation that tends to burn paper. Scattering of a laser beam is not discussed in the cited references. Tankowich US '339 states that the sheet must be translucent to the laser. Further, Tankowich US '339 states that "for white paper any laser wavelength provides satisfactory results" (see column 4, lines 7-8). However, this statement is absolutely incorrect. It is submitted that that CO<sub>2</sub> laser of a wavelength of 10.6  $\mu\text{m}$  cannot pass through a paper or board layer without burning it. Such burning can be avoided by using the diode and Nd:YAG laser wavelengths of 940 or 1064 nm due to scattering of the beam within the paper or board layer. Maeno JP '353 allegedly teaches that a "suitable" laser beam in the wavelength range of 750 to 1400 nm would pass through paper. However, such teachings are also incorrect. Most of the laser energy is scattered and reflected back and only a small part of the radiation reaches the

reverse side of the paper. In the present invention, this minor part of the laser has surprisingly turned out to be sufficient to heat the absorptive pigment so as to achieve melting of adjacently placed polymer material and sealing the materials as the polymer cools down.

Further, Maeno JP '353 and Tankowich US '339 do not provide specific teachings regarding a sealing of paper or board. At best, Tankowich US '339's invention may be applicable to materials other than paper (e.g., plastic films as discuss in column 6, lines 28-30 of Tankowich US '339). Thus, it is submitted that Maeno JP '353 and Tankowich US '339 are irrelevant art in relation to the present invention, alone or even in combination with other references.

Therefore, Maeno JP '353 and Tankowich US '339 do not provide any teachings to bridge the gaps among Kammler DE '726, Dries US '296 and the claimed invention, since none of the cited references discloses or suggests the use of a diode or a Nd:YAG laser source to achieve sealing on the opposite side of the targeted fibrous layer, taking advantage of partial scattering and partial penetration of the laser beam through said layer, as recited in the claims.

Therefore, there is no rationale and/or reasonable expectation of success based on the combination of the cited references, by which one skilled in the art could arrive at the present invention as claimed, since the cited references fail to disclose or suggest each of the instantly claimed features, as explained above. Thus, it is submitted that the present invention is not obvious over the combination of the cited references.

Based on the foregoing considerations, Applicants respectfully request that the Examiner withdraw the rejections.

**CONCLUSION**

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance.


In view of the above amendment, Applicants believe the pending application is in condition for allowance.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Toyohiko Konno, Registration No. 68,859, at the telephone number of the undersigned below to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Director is hereby authorized to charge any fees required during the pendency of the above-identified application or credit any overpayment to Deposit Account No. 02-2448.

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Respectfully submitted,

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